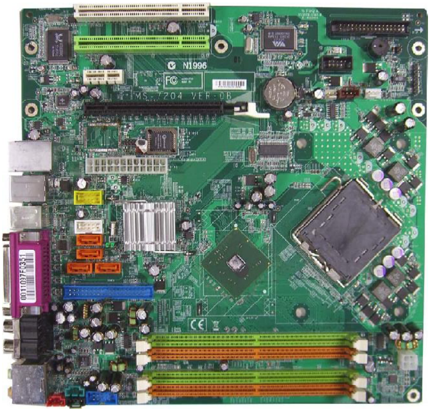
945P Series

MS-7204 (v1.X mBTX Mainboard)



Manual Rev: 1.0
Release Date: October 2005

N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Micro-Star International
MS-7204

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation

Copyright Notice

Trademarks

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Kensington and MicroSaver are registered trademarks of the Kensington Technology Group.
PCMCIA and CardBus are registered trademarks of the Personal Computer Memory Card International Association.

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

† Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver updates, and other information: **http://www.msi.com.tw** & **http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php**
† Contact our technical staff at: **support@msi.com.tw**

Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X with Intel 945P & ICH7/ICH7R	October 2005

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **Do not cover the openings.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged.
    - The equipment has obvious sign of breakage.
12. **Do not leave this equipment in an environment unconditioned, storage temperature above 60^0 C (140^{0}F), it may damage the equipment.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

WEEE Statement

ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...
Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt
Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. MSI hat europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

En tant qu'écologiste et afin de protéger l'environnement, MSI tient à rappeler ceci...
Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. MSI prendra en compte cette exigence relative au retour des produits en fin de vie au sein de la communauté européenne. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

Компания MSI предпринимает активные действия по защите окружающей среды, поэтому напоминаем вам, что....
В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы. MSI обязуется соблюдать требования по приему продукции, проданной под маркой MSI на территории ЕС, в переработку по окончании срока службы. Вы можете вернуть эти изделия в специализированные пункты приема.

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al termino de su período de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su periodo de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat....

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling.

Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podesti da…

Po Direktivi Evropske unije ("EU") o odbačenoj ekektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinuđeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja. MSI će poštovati zahtev o preuzimanju ovakvih proizvoda kojima je istekao vek trajanja, koji imaju MSI oznaku i koji su prodati u EU. Ove proizvode možete vratiti na lokalnim mestima za prikupljanje.

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...

Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005, tzw. "produkty oraz wyposażenie elektryczne i elektroniczne " nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia. MSI wypełni wymagania UE, przyjmując produkty (sprzedawane na terenie Unii Europejskiej) wycofywane z użycia. Produkty MSI będzie można zwracać w wyznaczonych punktach zbiorczych.

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektonik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

ČESKY

Záleží nám na ochraně životního prostředí - společnost MSI upozorňuje...

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti. Společnost MSI splní požadavky na odebírání výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdat v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünket megvédjük, illetve környezetvédőként fellépve az MSI emlékezteti Önt, hogy ...

Az Európai Unió („EU") 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetőek lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén. Az MSI betartja a termékvisszavétellel kapcsolatos követelményeket az MSI márkanév alatt az EU-n belül értékesített termékek esetében, azok élettartamának végén. Az ilyen termékeket a legközelebbi gyűjtőhelyre viheti.

ITALIANO

Per proteggere l'ambiente, MSI, da sempre amica della natura, ti ricorda che....

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita. MSI si adeguerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

CONTENTS

1

Getting Started

Thank you for choosing the **945P Series** (MS-7204) v1.x mBTX mainboard. The **945P Series** mainboard is based on **Intel® 945P** and **Intel® ICH7/ICH7R** chipset for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4 Prescott LGA775** processor, the **945P Series** mainboard delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU
- † Supports Intel® Pentium 4/ Celeron D Prescott LGA775 processors (Prescott and Smithfield) in LGA775 package.
- † Supports 2005 Performance FMB CPU VR Design.
- † Supports 3/4 pin CPU Fan Pin-Header with Fan Speed Control.
- † Supports up to Pentium 4 3XX, 5XX, 6XX & 8XX (Prescott and Smithfield)

Chipset
- † Intel® 945P chipset
  - Supports FSB 533/ 800/1066MHz.
  - Supports PCI Express x16 graphics interface.
  - Supports DDR2 533/667
- † Intel® ICH7/ICH7R chipset (optional)
  - Hi-Speed USB (USB2.0) controller, 480Mb/sec, up to 8 ports.
  - 4 SATAII ports with transfer rate up to 3Gb/s.
  - 1 channel Ultra ATA 100 bus Master IDE controller.
  - PCI Master v2.3, I/O APIC.
  - ACPI 2.0 Compliant.
  - Serial ATA RAID 0, RAID 1, RAID 10, RAID 5 and Matrix RAID. (for ICH7R)
  - Integrated AHCI controller (ICH7R).

Main Memory
- † Supports four unbuffered DIMM of 1.8 Volt DDR2 SDRAM
- † Supports up to 4GB memory size.
- † Supports Dual channel DDR memory architecture.
- † Supports DDR2 533/667 memory interface.

Slots
- † One PCI Express x16 slot.
- † One PCI Express x1 slots.
- † Two 32-bit v2.3 Master PCI bus slots (support 3.3v/5v PCI bus interface).
- † The second PCI slot (PCI 2.2, in green color) supports 3 devices.

On-Board IDE
- † One Ultra DMA 66/100 IDE controllers integrated in ICH7/ICH7R.
  - Supports PIO, Bus Master operation modes.
- † SATAII controller integrated in ICH7/ICH7R.
  - Up to 300MB/sec transfer speed.
  - Can connect up to four SATAII devices.
  - Supports AHCI controller with SATA Raid 0, Raid 1 and Matrix Raid (ICH7R).

On-Board Peripherals
- † On-Board Peripherals include:
  - 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
  - 1 serial port
  - 1 parallel port supports SPP/EPP/ECP mode
  - 1 Line-In / Front-Out / Side Surround / Center Bass / Back Surround

- 1 coaxial SPDIF-Out / SPDIF-In / Optical SPDIF-Out / SPDIF-In
- 8 USB ports (Rear * 4/ Front * 4)
- 1 RJ-45 LAN jack

LAN

† Intel 8100C
- Supports 10 / 100 Mb/s.

1394(optional)

† Supports two IEEE1394 onboard pinheader. Transfer rate is up to 400 Mbps.
† Controlled by VIA VT6307 chip.

Audio

† High Definition link controller integrated in Intel® ICH7/ICH7R chip.
† 7.1 + 2 channels audio codec Realtek ALC882.
- Compliant with Azalia 1.0 Spec.

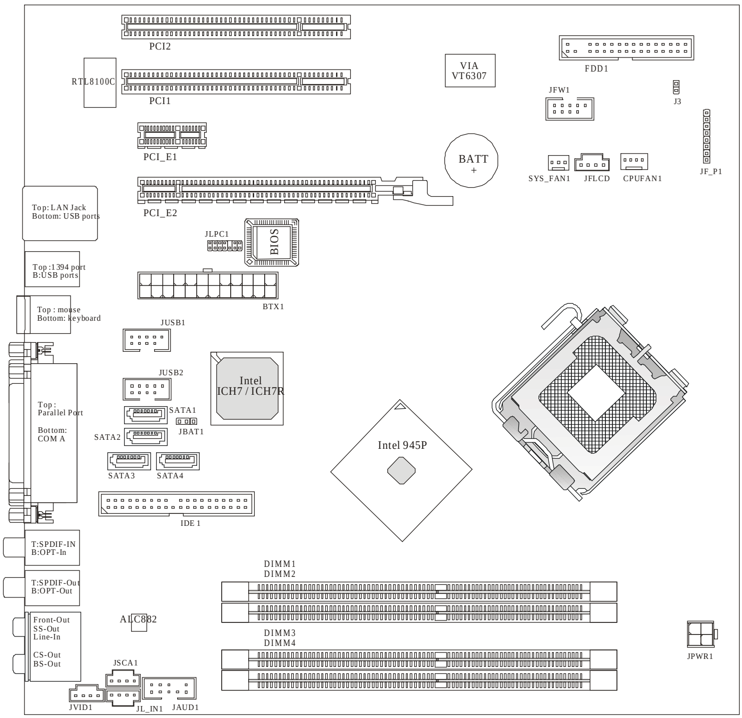
BIOS

† The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
† The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

Mounting and Dimension

† mBTX Form Factor: 26.7 cm x 26.5 cm
† 7 mounting holes

Mainboard Layout



945P Series(MS-7204) v1.x mBTX Mainboard

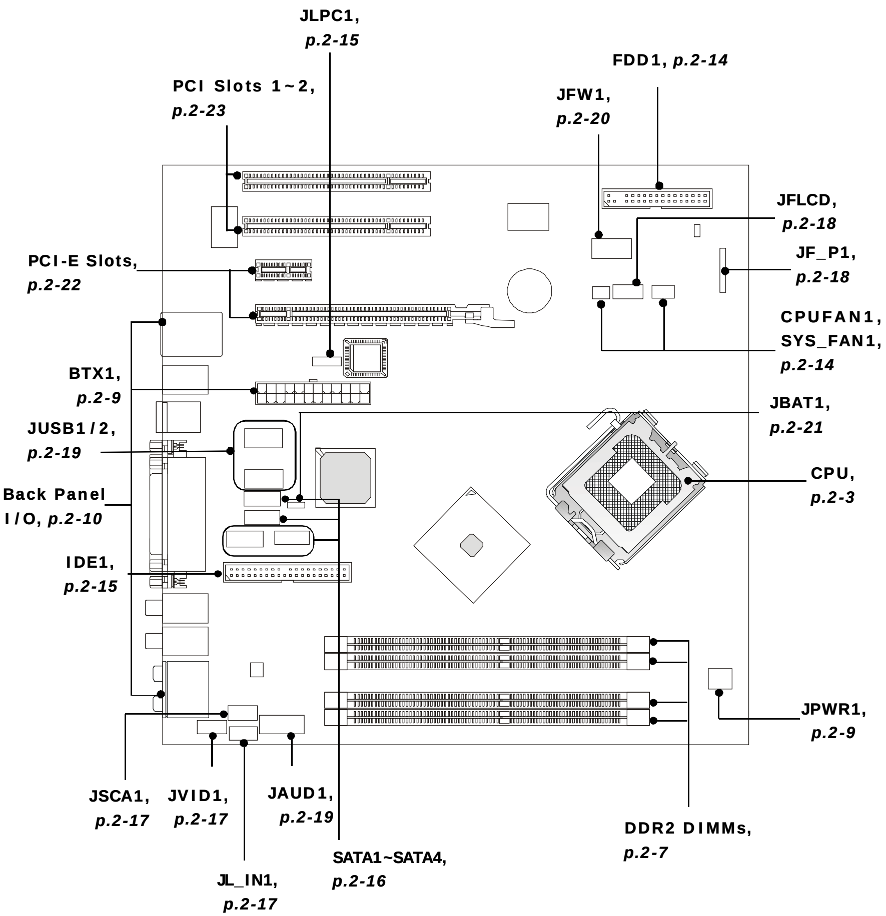
2

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports Intel® Pentium 4 Prescott processor. The mainboard uses a CPU socket called LGA775. When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, contact your dealer to purchase and install them before turning on the computer.

For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php.

MSI Reminds You...

Overheating

Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU

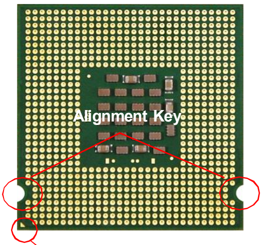
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

Overclocking

This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

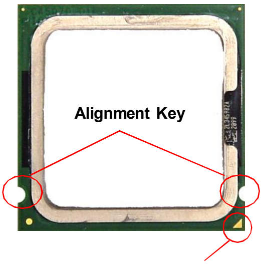
Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.



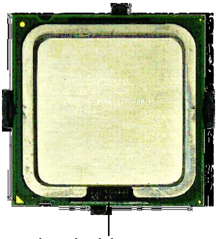
Yellow triangle is the Pin 1 indicator

CPU & Cooler Installation

When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** If you do not have the cooler, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU before installing the heat sink/cooler fan for better heat dispersion.

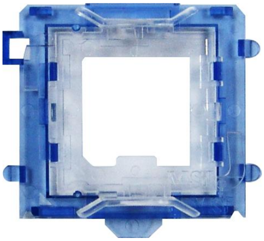
Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

1. The CPU has a land side cover on the bottom to protect the CPU contact from damage. Rotate it to make the pin 1 indicator (yellow triangle) in the right-bottom corner.

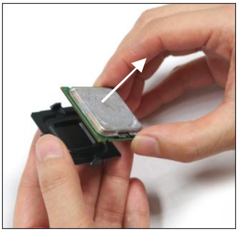


land side cover

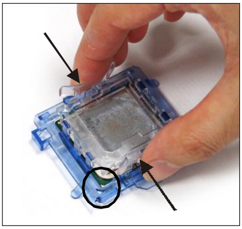
2. Take out the accompanying CPU Clip and rotate it for the same direction as the CPU (Pin 1 indicator is in the left-bottom corner).



3. Use 2 hands to remove the land side cover (if any). Please note not to touch the pins.



4. Align the two pin 1 indicators (the triangles on the CPU & the CPU Clip), and use the CPU Clip to clip the CPU up, pressing the clips on both sides to the center, as the arrows shown.



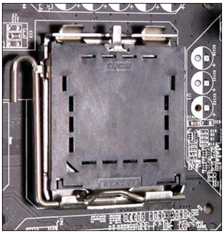
MSI Reminds You...

1. Confirm if your CPU cooler is firmly installed before turning on your system.

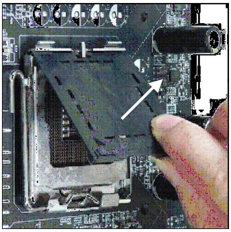
2. Do not touch the CPU socket pins to avoid damaging.

3. The availability of the CPU land side cover depends on your CPU packing.

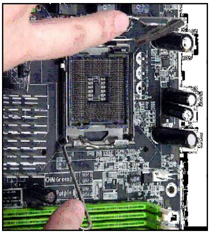
5. The CPU has a plastic cap on it to protect the contact from damage. Before you have installed the CPU, always cover it to protect the socket pin.



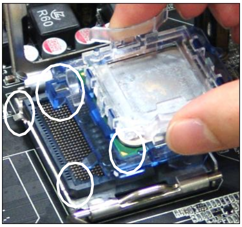
6. Remove the cap from lever hinge side (as the arrow shows). The pins of socket reveal.



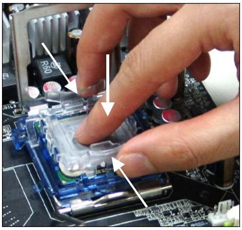
7. Lift the load lever up and open the load plate.



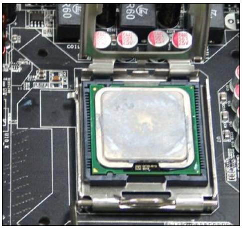
8. Correctly align the triangle of CPU Clip with the CPU chamfer, and the square on the CPU Clip to the hook of the socket.



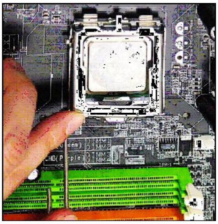
9. Use your thumb and the middle fingers to push the clips to release the CPU, then press down the CPU with your index finger to allow the whole module to be installed onto the CPU socket.



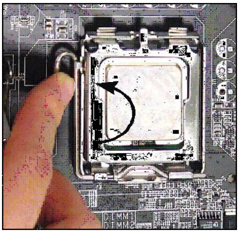
10. The CPU is installed well on the CPU socket.



11. Visually inspect if the CPU is seated well into the socket, then remove the CPU Clip with 2 fingers. Then cover the load plate onto the package.

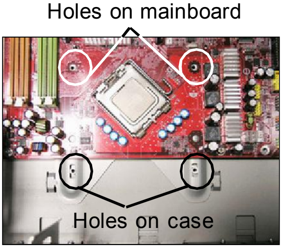


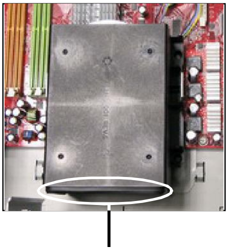
12. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



13. Position the mainboard into the chassis and use the retaining screws to secure it into the place. Then align the holes on the mainboard and chassis with the cooler.

14. Put down the cooler and use the retaining screws of the cooler to secure it into the place. Make sure the cooler is in the proper orientation, the cooler will only fit in the right orientation. (Please refer the pictures below.)





MSI Reminds You...

*1. Check the information in **PC Health Status** of **H/W Monitor** in BIOS (Chapter 3) for the CPU temperature.*

2. Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.

3. Please note that the mating/unmating durability of the CPU is 20 cycles. Therefore we suggest you do not plug/unplug the CPU too often.

Memory

The mainboard provides 4 slots for 240-pin DDR2 DIMM, which supports the memory size up to 4GB.

Since DDR2 modules are not interchangeable with DDR1 and the DDR2 standard is not backward compatible, you should always install DDR2 memory module in the DDR2 slot (DIMM1~DIMM4). Otherwise, you are not able to boot up your system and your mainboard might be damaged.

For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.



DIMM1~DIMM4
(from Top to buttom

Channel A (DIMM1 & DIMM2)
Channel B (DIMM3 & DIMM4)

Introduction to DDR2 SDRAM

DDR2 is a new technology of memory module, and its speed is the top limit of current DDR1 technology. DDR2 uses a 1.8V supply for core and I/O voltage, compared to 2.5V for DDR1, and requires 28% less power than DDR1 chips. DDR2 truly is the future of memory, but will require some changes as the technology is not backwardly compatible and only motherboards specifically designed for DDR2 memory will be able to support these chips.

DDR2 incorporates new features at the chip level that give it better signal integrity, thereby enabling higher clock speeds.

DDR2 modules have 240 pins, versus 184 pins on a DDR1 module, and the length of DDR2 module is 5.25”. DDR2 modules have smaller and tighter spaced pins. The height of DDR2 modules varies, but they will typically be less than 1.3” in height.

Memory Module Population Rules

Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs. Please note that ***each DIMM can work respectively for single-channel DDR, while both channels (in different color) populated with same amount of memory size will work as dual-channel DDR***.

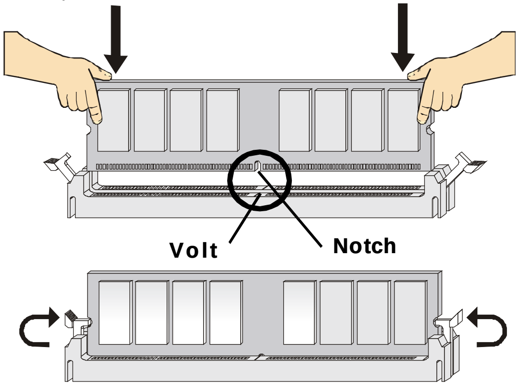
GREEN	ORANGE	GREEN	ORANGE	
DIMM1 (Ch A)	DIMM2 (Ch B)	DIMM3 (Ch A)	DIMM4 (Ch B)	System Density
256MB~1GB	256MB~1GB			512MB~2GB
	256MB~1GB	256MB~1GB		512MB~2GB
256MB~1GB			256MB~1GB	512MB~2GB
		256MB~1GB	256MB~1GB	512MB~2GB
256MB~1GB	256MB~1GB	256MB~1GB	256MB~1GB	1GB~4GB

MSI Reminds You...

- *Dual-channel DDR works **ONLY** in the 5 combinations listed in the table shown in the previous page.*
- *Please select the identical memory modules to install on the dual channel, and DO NOT install three memory modules on three DIMMs, or it may cause some failure.*
- *Always insert the memory modules into the GREEN slots first, and it is strongly recommended not to insert the memory modules into the ORANGE slots while the GREEN slots are left empty.*
- *This mainboard DO NOT support the memory module installed with more than 18 pieces of IC (integrated circuit).*
- *Due to the South Bridge resource deployment, the system density will only be detected up to 3+GB (not full 4GB) when each DIMM is installed with an 1GB memory module.*

Installing DDR2 Modules

1. The DDR2 DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.
3. The plastic clip at each side of the DIMM slot will automatically close.



MSI Reminds You...

You can barely see the golden finger if the module is properly inserted in the socket.

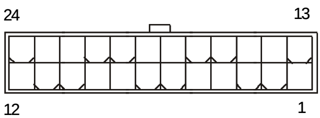
Power Supply

The mainboard supports BTX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

BTX 24-Pin Power Connector: BTX1

This connector allows you to connect an BTX 24-pin power supply. To connect the BTX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

BTX1



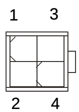
Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

BTX 12V Power Connector: JPWR1

This 12V power connector is used to provide power to the CPU.

JPW1



Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

MSI Reminds You...

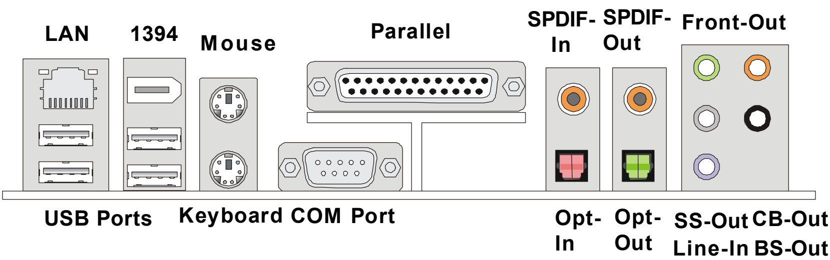
1. These two connectors connect to the BTX power supply and have to work together to ensure stable operation of the mainboard.

2. Power supply of 350 watts (and above) is highly recommended for system stability.

3. BTX 12V power connection should be greater than 18A.

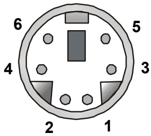
Back Panel

The back panel provides the following connectors:



Mouse/Keyboard Connector

The mainboard provides a standard PS/2® mouse/keyboard mini DIN connector for attaching a PS/2® mouse/keyboard. You can plug a PS/2® mouse/keyboard directly into this connector. The connector location and pin assignments are as follows:



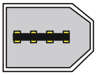
PS/2 Mouse / Keyboard
(6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse/Keyboard Data	Mouse/Keyboard data
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse/Keyboard Clock	Mouse/Keyboard clock
6	NC	No connection

IEEE 1394 Port

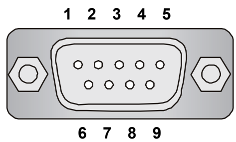
The back panel provides one standard IEEE 1394 port. The standard IEEE 1394 port connects to IEEE 1394 devices without external power. The IEEE 1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.



1394 Port

Serial Port Connector: COM Port

The mainboard offers one 9-pin male DIN connector COM Port. It's a 16550A high speed communication port that send/receive/ 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to it.



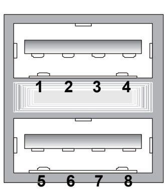
9-Pin Male DIN Connector
COM Port

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

USB Connectors

The mainboard provides an OHCI (Open Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.



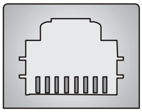
USB Ports

USB Port Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

LAN (RJ-45) Jack

The mainboard provides 1 standard RJ-45 jack for connection to single Local Area Network (LAN). This LAN enables data to be transferred at 100Mbps or 10Mbps. You can connect a network cable to it.



RJ-45 LAN Jack

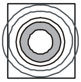
10/100 LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

Audio Port Connectors

The left 3 audio jacks are for 2-channel mode for stereo speaker output: **Front Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices.

However, there is an advanced audio application provided by Realtek ALC882 to offer support for **7.1-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/5.1-/7.1- channel audio.



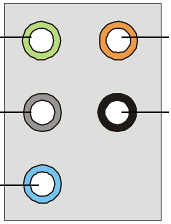
S/PDIF Out/In-Coaxial



SPDIF-Out

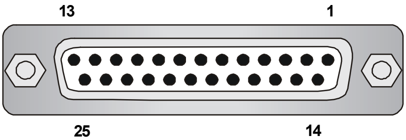


SPDIF-In



Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin Definition

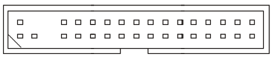
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	PaperEnd
13	SELECT	Select
14	AUTO FEED#	AutomaticFeed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, LAN, and USB Ports.

Floppy Disk Drive Connector: FDD1

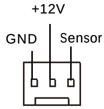
The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



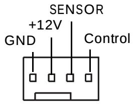
FDD1

Fan Power Connectors: CPUFAN1/SYS_FAN1

The CPUFAN1 (processor fan), SYS_FAN1 support system cooling fan with +12V. It supports four/three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.



SYS_FAN1



CPUFAN1

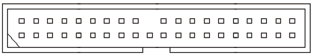
MSI Reminds You...

1. *Always consult the vendors for proper CPU cooling fan.*
2. *CPUFAN1 supports the fan control. Fan/heatsink with 3 or 4 fins are both available.*
3. *Be sure to configure the* ***CPU FAN PIN Select*** *in BIOS for the CPU Fan you are using first.*
4. *Please refer to the recommended CPU fans at Intel® official website.*

Hard Disk Connector: IDE1

The mainboard has one 32-bit Ultra DMA 66/100 IDE controller integrated in the chips Intel ICH7R, which supports PIO & Bus Master operation modes and it can connect up to two Ultra ATA drives.

IDE1 (blue)

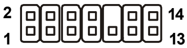


MSI Reminds You...

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

FWH/LPC Debugging Pin Header: JLPC1

The pin header is for internal debugging only.



JLPC1

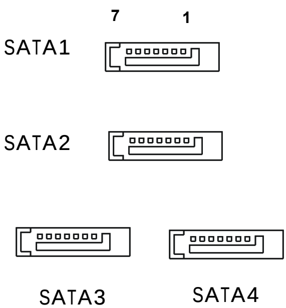
JLPC1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	LCLK	2	Key(no pin)
3	LRST#	4	VCC3
5	LAD0	6	FID0_LRST
7	LAD1	8	VCC5
9	LAD2	10	Key(no pin)
11	LAD3	12	GND
13	LFRAME#	14	GND

Serial ATA Connectors controlled by Intel ICH7: SATA1~SATA4

The SouthBridge of this mainboard is Intel ICH7 which supports four serial ATA connectors SATA1~SATA4.

SATA1~SATA4 are dual high-speed Serial ATA interface ports. Each supports 1st generation serial ATA data rates of 150 MB/s. Both connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device.

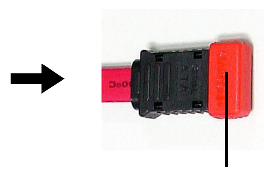


SATA1~ SATA4 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

Serial ATA cable





Take out the dust cover and connect to the hard disk devices

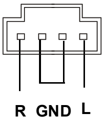
Connect to serial ATA ports

MSI Reminds You...
Please do not fold the serial ATA cable in a 90-degree angle, since this might cause the loss of data during the transmission.

Video-In Connector: JVID1

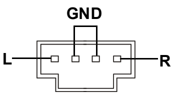
The connector is for TV-Tuner card audio connector.

JVID1



Front Line-In Connector: JL_IN1

The connector is for front line-in connector.

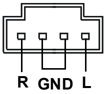


JL_IN1

SCART Output Connector: JSCA1

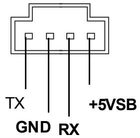
The JSCA1 connector allows you to connect the output device with SCART spec. SCART is the established European standard for connecting home video equipments like TVs, VCRs, DVD players, etc.

JSCA1



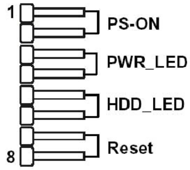
Front LCD Module Header: JFLCD

The connector allows you to connect to Medion VFD LCD panel.



Front Panel Connectors: JF_P1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. JF_P1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

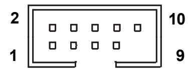


JF_P1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	PS_ON	Power Switch On (1)
2	PS_ON	Power Switch On (2)
3	PWR_LED	Power LED (+)
4	PWR_LED	Power LED (-)
5	HDD_LED	HDD LED (-)
6	HDD_LED	HDD LED(+)
7	Reset	Reset (1)
8	Reset	Reset (2)

Front USB Connectors: JUSB1 / JUSB2

The mainboard provides two standard USB 2.0 pin headers JUSB1 / JUSB2. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.



JUSB1 / JUSB2
(USB 2.0/standard spec)

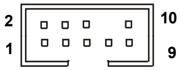
JUSB1 / JUSB2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	USBOC

MSI Reminds You...
Note that the pins of VCC and GND must be connected correctly, or it may cause some damage.

Front Panel Audio Connector: JAUD1

The F_AUDIO front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



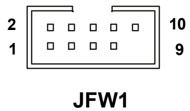
JAUD1

JAUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	PORT 1L	Analog Port 1 - Left channel
2	GND	Ground
3	PORT 1R	Analog Port 1 - Right channel
4	PRESENCE#	Active low signal - signals BIOS that a High Definition Audio dongle is connected to the analog header. PRESENCE# = 0 when a High Definition Audio dongle is connected.
5	PORT 2R	Analog Port 2 - Right channel
6	SENSE1_RETIRN	Jack detection return from front panel JACK1
7	SENSE_SEND	Jack detection sense line from the High Definition Audio CODEC jack detection resistor network
8	KEY	Connector Key
9	PORT 2L	Analog Port 2 - Left channel
10	SENSE2_RETIRN	Jack detection return from front panel JACK2

IEEE 1394 Connector: JFW1 (Optional)

The mainboard provides one 1394 pin header that allow you to connect optional IEEE 1394 port.



Pin Definition

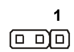
PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

Jumpers

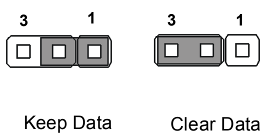
The motherboard provides the following jumper for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumper.

Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the system configuration data. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS) Jumper to clear data. Follow the instructions below to clear the data:



JBAT1



MSI Reminds You...
You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

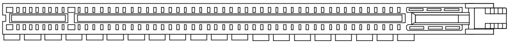
The mainboard provides a PCI Express x16 slot, a PCI Express x1 slot and three 32-bit PCI bus slots.

PCI Express Slots (optional)

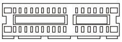
The PCI Express slots, as a high-bandwidth, low pin count, serial, interconnect technology, support Intel highest performance desktop platforms utilizing the Intel Pentium 4 processor with HT Technology.

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics infrastructure for Desktop Platforms doubling the capability of existing AGP 8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers.

You can insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first.



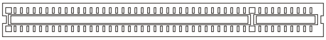
PCI Express x16 slot



PCI Express x1 slot

PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.



PCI Slots

PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT B#	INT C#	INT D#	INT A#
	INT E#	INT F#	INT G#	INT H#
	INT F#	INT G#	INT H#	INT E#
PCI Slot 2	INT A#	INT B#	INT C#	INT D#